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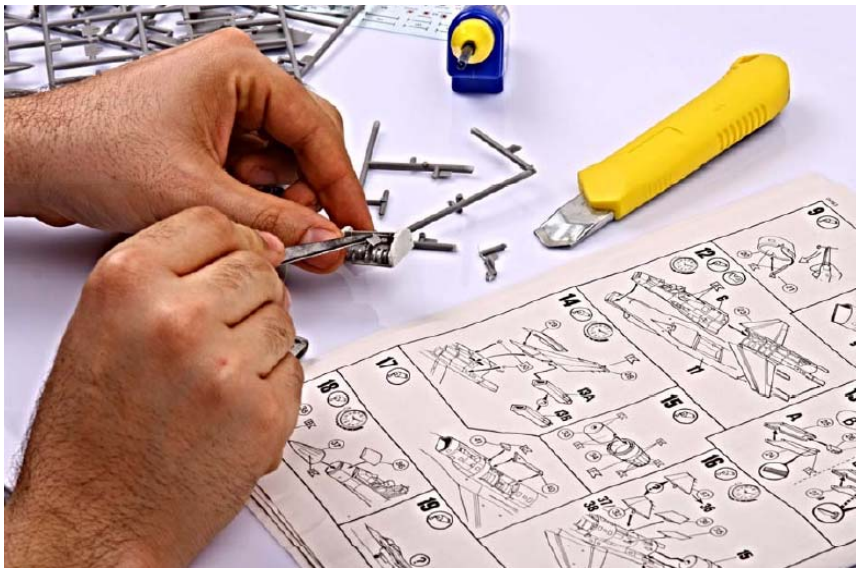
A Commentary by Harley Bassman:

The Convexity Maven

Value Concepts from the Credit Suisse Trading Desk
December 10, 2013

"The 2014 Model Portfolio"



Radiant Orchid – 2014 Color of the Year

"Groundhog Day" is running a bit early this year as we wake up to market conditions at the dawn of 2014 that look quite similar to last year's daybreak. The FED is still holding rates near zero as they continue to buy bonds at a pace that absorbs the majority of net new Treasury and residential Mortgage debt. Most important, Plan "A" is still a work in progress: *Increase Monetary Velocity via Financial Repression (ZIRP and Asset Substitution) to create Inflation, depreciate nominal debt, and de-lever both the public and private economies of the United States.*

The only substantial macroeconomic alteration from 2013 is that the second most powerful person on the planet now genuflects towards Keynes instead of davening towards Friedman. But both Mr. Bernanke and Ms. Yellen recognize that Fiscal Policy has become totally paralyzed by the mutually self-destructive hijinks between the Congress and the Executive branch thus necessitating their yeoman service on behalf of the nation.

Our core investment theme remains unchanged: To mitigate a debt crisis one must either default or inflate, where one acknowledges that inflation is just a slow motion default.

To those who retort that the FED cannot willfully create inflation and point to Japan as their proof, let us just say that until the introduction of Abe-nomics, Japan had just not yet tried hard enough.

So the issue is NOT whether the FED can create any inflation, but rather can they create a calming 3% to 4% increase in nominal prices as opposed to a riot inducing 8% to 12%. Manufacturing big inflation is relatively easy, provided you have a substantially large standing army; producing a moderate inflation is a much more challenging feat. I would fashion that to landing a Boeing 747 into Yankee Stadium; it is surely possible, it is just not likely.

The FED wants inflation, as such, we will have inflation; the only questions is whether it will take six months or six years.

ZIRP and QE~ (infinity) are the main ingredients of the FED's magical elixir to mitigate any possible repeat of 1936/37 where both fiscal and monetary conditions were tightened and the economy promptly crashed. There is every indication that Ms. Yellen will keep ladling punch from this boiling cauldron until we ring in the New Year in 2016.

As we enter 2014, the only word shared across all tongues is "Taper". While the FED could certainly pull this card from its sleeve at any time, I suspect they will choose leisure rather than haste. Moreover, when that date finally arrives, it will be draped with a tapestry of "language and guidance" hinting that ZIRP will not be removed too soon.

The most significant change in the investment environment is that the key driver of USD Rate volatility has been reduced; the MBS market will have much less influence. It is well known that the GSEs are winding down their ironic RIPs (retained investment portfolios) and MBS Servicers will keep their risk exposure on a tight leash. It has also been disclosed that the REITs are more fully hedged. But these changes only impact how excess MBS risk is managed; the BIG news is that the underlying MBS risk profile (Convexity) has been reduced.

This is a direct result of the intricacies of QE-MBS. When the FED buys MBS they do NOT buy a cusip, rather they purchase a TBA (to be announced) bond. Upon the settlement date each month, dealers who have sold bonds to the FED sort through their inventory and delivery the most negatively convex bonds. These bonds have the highest WAC, the largest loan balance, or come from the highest turnover locations. The MBS left in the "free float" will be less likely to prepay and thus be less negatively convex. This is why MBS coupon swaps are wider and the bonds have much longer empirical durations. In summary, less extension risk will translate into less convexity hedging, and as such, less volatility. Rates will rise this year, they just will not "trap door down".

ZIRP 2016: Positive Carry with Limited Loss

Sell 100mm	2 year into	8yr - 20yr	payer mid-curve	K = 5.00%
Buy 100mm	10 year into	- 20yr	payer	K = 5.00%
Pay 400bps			(Forward Rate = 4.63%)	

1) Loss limited to the 400bp premium paid;
2) Positive "roll down" Carry of 145bp during the first year;
3) Potential unlimited gain if the front leg expires worthless.

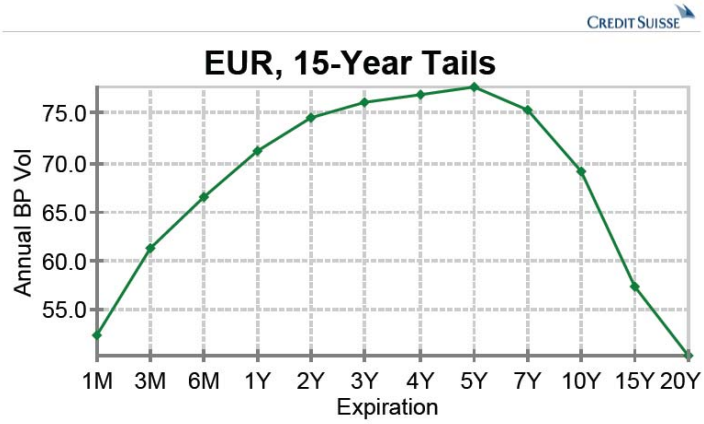
The "carry hogs" who are confident that Ms. Yellen will maintain ZIRP into 2016 are piling into The Blues to capture the static 108bps of carry embedded into the one-year rate, one-year forward. Unfortunately, the cost for this purported opulence is unlimited downside exposure if the FED moves earlier than expected.

In sharp contrast, our "Best Rates Trade" sports a static carry of 145bps with a loss limited to the upfront fee paid. Similar to a "butterfly" trade, this package will be most valuable if the 8yr-20yr rate is near the 5.00% strike upon the expiry of the first option leg. The "magic" of this synthetic forward volatility construction is derived from the sale of a two-year option with an Implied Volatility near 85nv versus the purchase of a ten-year option near 69nv on the identical Forward rate. This totally eliminates the usual Yield Curve exposure one has on a typical vanilla calendar spread.

One might think this opportunity exists because investors are reticent to traffic in the less liquid long-dated options sector and then absorb the associated mark-to-market vibrations. But ultimately this is the unintended consequence of banking regulations that have become more tight-fisted. The tradition of dealers cushioning the risk transfer process via inventory accumulation has been greatly reduced, as such, Volatility Term Surface distortions take much longer to reconcile. This is a risk surface anomaly that we project will be "in the money" as long as the T10yr rate is between 2% and 5%; it is our Best Rates Trade.

If Dr. Frankenstein traded rates, he would do this…..

						Price	Yield	IVol	Delta	Vega
Sell EUR 100mm	3yr -	15yr	3.50%	pyr	@	425bp	3.13%	79nv	+36k	-77k
Buy EUR 100mm	15yr -	15yr	3.50%	pyr	@	575bp	2.95%	60nv	-16k	+126k



Since this is a "family" Commentary, we will restrain ourselves and leave it to your fertile imagination to divine the similar manner in which the good doctor and I dig up various investment themes.

So let us be clear, this trade is a mark-to-market monster. However, for that sacrifice, five of the six risk vectors you are exposed to roll positively to create over 200bps of carry in year one, a huge number for an even up notional trade.

In essence we have stitched together a few somewhat self-hedging risk surfaces that are synchronous to our view that Europe will slowly heal in a few years.

In this particular construction, over the first year the three-year option rolls down the Vega surface by 1.6nv while the fifteen-year option rolls up the Vega surface by 2.3nv. Over the same horizon, your long rate exposure on the short option rolls down by 17bps while your short rate exposure on the long option rolls up by 7bps. Finally, with respect to pure theta, your short decays by 104bps while your long losses only 5bp of value. Almost every risk component of this trade produces positive static income.

As noted, this trade is quite unstable on a day-to-day basis since it is net long exposure to Rates at inception (that will bleed down over time) and your Volatility Term Surface risk is negatively correlated to Interest Rates. However, the surface risk will be softened over time since the net long total Vega is positively correlated to Rates. Finally, unlike our USD version, this puppy has a lot of Curve exposure. Sizing is vastly more important than entry level.

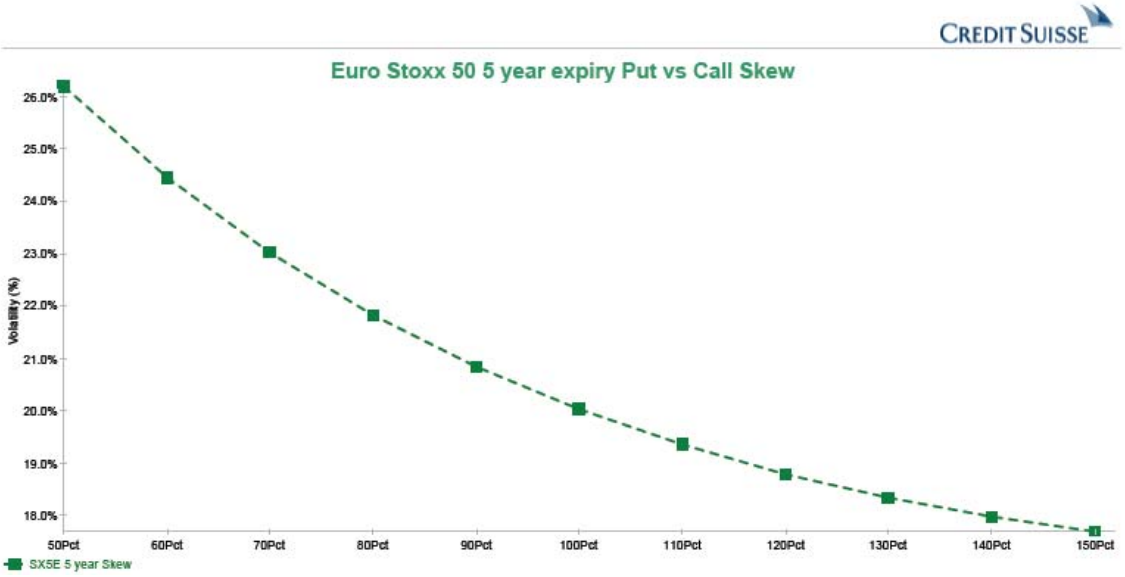
Our Best Equity Trade

Buy Euro Stoxx 50 Index five-year expiry call option, K = 3,500
Sell Euro Stoxx 50 Index five-year expiry put option, K = 2,100
Enter the trade at Zero cost, Spot Index ~~ 3000

Cute cover art and fun colors aside, this Commentary is written by the Convexity Maven, as such our primary focus is discerning investments opportunities where one can gain exposure to unbalanced leverage (Convexity) at a minimal cost, this might also be called the search for free options.

So let us consider the Equity market in general, and options on Equities in particular. Recall that your Econ 116 class described a single name stock as a call option on the Enterprise where the strike price is equal to the par value of the debt. Thus the allure of Equities, they offer significant upside leverage on a business's success with the loss limited to only the dollars invested up front.

So let's expand this idea. If one buys $1000 of pure Equity, the most one can lose is $1000; however, if one shorts a similar amount to be held over a five to ten year horizon, the loss potential can be a multiple of that. So why is it that on the Euro Stoxx 50 Index, a five-year put option struck 50% out-of-the-money –the mistletoe line- trades to an Implied Volatility 33% higher than an at-the-money option while an equidistant call option would mark at an Implied Volatility 11% less than an at-the-money option ?



Before you start bleating about the well-established skew profile for options on generic assets, I urge you to review our April 17, 2013 Commentary – *"Skewered by Skew"* where we detail the key drivers of skew. For while Jump Risk, Path Dependency, and Supply::Demand do necessarily drive skew for short-dated

"gamma" options, these risk vectors are relatively inconsequential for longer-dated "vega" options. Delta and Vega are the dominate risk for long-dated options, a point reinforced by the fact that a five-year option has only 15% of the Convexity of a three-month option, and a ten-year option has almost no exposure to that risk vector.

We will stipulate that Convexity is the key driver of Skew, but here is the rub: For gamma-option trades the relevant source of Convexity is the option while for vega-option trades the main source of Convexity comes from the underlying asset. This is the critical insight; since the Convexity of Equities is much greater than the Convexity of long-dated options, the Skew profile for vega-options should not be as negatively sloped as that for gamma-options.

(Un)Reality Check #1: Does it seem reasonable for an **unlimited gain** profile (call) option struck 500 points away to have the same cost as a **limited loss** profile (put) option struck 900 points away?

(Un)Reality Check #2: Should the dollar cost to own 30% of the payoff distribution (the delta of the call) be the same as the dollar cost of being exposed to 19% of the distribution (the delta on the put)?

The US economy as represented by the -cobalt line- S&P has substantially outperformed the EU economy as represented by the -fandango line- Euro Stoxx since the crisis. However, for agreeing to take the risk of owning the Euro Index near its –thulium line- decade low, you can capture all the upside if Europe cures itself and its economy regains its footing. I would remind you the S&P was at 1200 nary 24 months ago, and five years is a long, long time. Think about it !!

Be "Paid to Wait" for the Japanese Denouement

I have always presumed that Wile E. Coyote (b. 9/17/1949) was a lot smarter than SpongeBob SquarePants (b. 5/1/1999), but upon reflection, even with his Acme Catalogue of widgets, Mr. Coyote still crashed off the cliff when Laws of Gravity finally prevailed while Mr. Pants merrily flips his Krabby Patties.

As detailed in our November 25, 2013 Commentary – *"Money for Nothing"*, the Japanese Macro-experiment of defying the Laws of Financial Gravity must at some point resolve, I just do not know when. Accelerated by the most unbalanced demographic in the G-20, in the not too distant future a negative trade balance will begin to exhaust their external asset position (wealth/savings). This will mitigate their ability to internally fund their public debt; and at that point the marginal Yen must be borrowed externally. This truth is the "Gravity" that will depreciate the JPY.

	Expiry	Fwd Fx	Implied Vol	Option Px	Delta	1yr Theta
Spot Fx	>>>>>:	102.63		K = 100		
	1yr	102.34	11.3%	$5.67	54.6%	
	2yr	101.56	11.8%	$7.32	49.6%	-$1.65
	3yr	99.83	12.2%	$8.13	45.6%	-$0.81
	4yr	97.06	12.5%	$8.27	41.6%	-$0.14
	5yr	93.55	12.9%	$8.08	37.8%	$0.19
	6yr	89.71	13.4%	$7.79	34.6%	$0.29
	7yr	85.87	13.7%	$7.37	31.9%	$0.42
	8yr	82.35	14.3%	$7.27	30.0%	$0.10
	9yr	79.02	14.7%	$7.08	28.5%	$0.19
	10yr	75.91	15.0%	$6.85	27.2%	$0.23

mid-market model px

Source: Credit Suisse

The –byzantium table- above is neither financial "magic" nor an "option special". (These are all plain vanilla options that can be priced using Bloomberg's OVDV screen.) Rather, it is merely the interesting mathematical paradox between the Rate process which is Linear and the Time process which is Logarithmic.

In a nutshell, net interest income is linear to time so two years worth of coupon payments are twice the size of a single year's value. In contrast, an option's price increases with the square root of time, so a two-year option is only 1.4 times greater in price than a one-year option.

The result is the opportunity to purchase a ten-year call option, struck at 100, on the JPY::USD currency rate that effectively has Positive Carry using a static construction. You are "paid to wait". Buy this option and call me in five years.

Buy Brazilian Real Local Currency Global Bonds

Whether your tastes lean towards James Bond or Chuck Norris, we like our heroes to be "cool cats" who do not panic under pressure. Such is the fantasy of these types since the nature of humanity is for "Fight or Flight" and not a measured response.

So we were not too surprised when the phone lines turned cold soon after last year's suggestion to buy the Argentina 7% of Oct 2015 dollar bonds at 90 (~12%). Such a pity that an adverse court ruling issued while the trade ticket was still warm sent Argie rates up and our bonds were kissing an 81-handle.

Our patience was rewarded (we were too shell shocked to sell) and now our bonds trade at 97 creating a 15% total return (Price + Coupon). This compares quite favorably to the slightly negative total return a similarly timed purchase of five-year Treasuries would have produced.

So while I acknowledge that the timing may be suspect, I like the Brazilian Local Currency bond market. The eight-year and fourteen-year Global bonds now yield slightly over 10.25%, a rate not seen since late 2010. Moreover, the –russet line- currency at 2.39 is approaching a level not sustained in nearly a decade.

We diehard inflationists like Brazil as a "hard asset" country, as opposed to other EM's that profit from "cheap labor". As such we may be able to beat the –lavender- one-year forward of 2.60 and should almost certainly outperform the 3.15 –carnation- three-year forward. This is my least confident suggestion. Note: Similar petite size structured LC notes can be found at ~12%.

Paying Nickels for Dimes in Vanilla Rates

Buy a two-year expiry Sw5yr vs Sw10yr Interest Rate Curve Cap @ 19bp
Strike (forward) = 82bp; Spot spread = 137bp [ratio ~ 2.90 times]

There is a strong fundamental case to be made that the Yield Curve will remain quite steep into the moderate future, not the least of which is Janet Yellen's "guidance" and philosophical proclivities; but I will leave that story to our able team of strategists. Rather this trade qualifies because it meets our Convexity Rule to buy an option when the ratio of cost to carry approaches three to one.

At its core, the *Three to One Rule* is a way to monetize the strong relationship between the shape of the Yield Curve and the level of Implied Volatility. This rule is a signal to when the Yield Curve and Volatility vectors become misaligned.

There is an unusually strong correlation between the shape of the Yield Curve and Implied Volatility. This is because an ultra-steep (or inverted) Curve implies great uncertainty. When any Spot Risk Vector is flat, its Forward values are equal to Spot values; hence the future is projected to be placid. However, once some shape is introduced, Forwards move away from Spot; so the greater the shape (either positive or negative) the greater the distance between the two. While it is somewhat a "chicken" and "egg" notion, ultimately Forwards grind towards Spot or Spot prices head towards the Forward; and the greater the distance, the greater the absolute change that must occur. Since Implied Volatility tends to be a function of uncertainty, Implied Volatility tends to rise with the greater risk embedded in a super steep (or inverted) Curve.

With this in mind, let's analyze the underpinnings of the Three to One Rule. Assuming we have no knowledge of the future course of FED policy, then it should be a coin-flip as to whether Forward rates grind to Spot levels or the Spot value pushes towards the Forward. Since FED policy has not changed the fact that a coin-flip is still a 50-50 event (helicopter drops of pocket change might injure someone), the fair pay-off for a "flip" should be 2 to 1.

Inserting this trade idea into our two-state example, there is a 50% chance that the –zaffre line- Forward spread of 82bp rises to the –tangelo line- Spot value of 137bp versus a 50% risk of an opposing outcome. If Forwards move to Spot, one earns 55bp for the 19bp cost of the option, nearly a 3 to 1 payoff; if the Spot moves to the Forward, the most one can lose is the 19bp investment. This means you can earn a 3 to 1 payoff on a 2 to 1 risk. Functionally, you are long Convexity with Positive Carry, a truly anomalous yet valuable trading position.

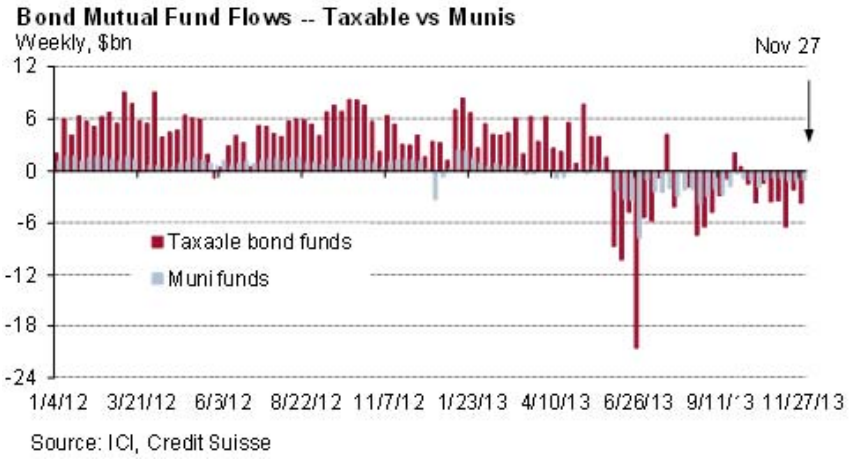
While the Three to One Rule can stand on its own for derivative specialists, regular folk should reach for a "buy ticket" when it happen to tightly align with one's fundamental view of the landscape.

Buy Single Name Municipal Bonds

It has been a triple-whammy for the Municipal Bond market this year:

1) Detroit is in bankruptcy and smoke signals are rising in Puerto Rico;
2) The Government may seek "revenue" by modifying tax exemptions;
3) Intermediate maturity interest rates are up over 100bps since May.

Retail investors have been heavily liquidating Bond Mutual Funds since the FED first let "taper" cross its lips, and they have been proportionally selling more –celeste line- Municipal Funds than –vermillion line- Taxable Funds



The impact of the retail investor's distaste for Municipal Securities can be most clearly scrutinized via the horrendous performance in the non-institutional playground known as Closed-End Funds.

Some National funds are now sporting yields close to 7-handle after their prices crashed by 20% since late Spring. Various funds are now trading at a 10% discount to NAV, the lower boundary for the past decade, except for the illiquid period surrounding the Lehman event. Consequently, some of these funds are priced to produce a pre-tax yield of nearly 11%.

One might think these funds would be my primary focus, but I prefer high-grade single name bonds:

1) One can select more highly rated securities;
2) A "single name" will roll down the Curve and eventually mature;
3) No leverage, so no (direct) exposure to FED rate hikes;
4) Better liquidity if you want to exit in a hurry.

While I will offer no single name suggestions, I can tell you that some AA+ rated 25nc10 bonds trade in the context of 4.25% or about 110% to 115% of similar maturity Treasuries. While bonds this long will expose one to substantial Interest Rate risk, Municipal Bonds have a long history of tightening into rising rates, this could soften the potential for mark-to-market losses. A ballpark 7.0% pre-tax yield compares quite favorably to the CS High Yield Index at 5.65%.

Moving Treasury Average IO and Alt-A Inverse IO Floaters

These bonds are certainly off-the-run, but this is about all that is left in the Mortgage Market cupboard with yields in the context of 9% and 7% respectively.

MTA-IO is the interest stream from Pay-Option ARMs issued before the housing bubble burst. Pay-Option ARM loans were a great consumer product that was corrupted by competitive forces. This type of loan offered the buyer the ability vary his monthly payments as needed. Minimum payments would trigger reverse amortization so interest short-falls would be added as principle to the loan; generous payments would reduce the total mortgage obligation. This was the ideal product for high earning (often commission based employees) who had wide income swings from month to month but ultimately earned a good salary over the course of the year.

The Interest Only stream from these bonds is more of a "credit story" than an "interest rate game" as cash flows tend to be reduced by defaults more than prepayments. In addition to default risk, the other uncertainty is projecting how

quickly the servicer will “modify” these loans. While CS believes we have good handle on both of these risk vectors, this certainly is the reason you are offered a 9% base-case yield in a 2% rate environment. As a starting point, we are using a 12% annual CDR (Conditional Default Rate) that maps to a 50% Total Liquidation in combination with a 15% Modification Rate on 60+ delinquent loans. We like WAMU issued bonds as they tend to be more predictable.

If you would like to sacrifice some coupon for a bit more certainty, consider Alt-A Inverse IO. To remind you, Alt-A was another terrific mortgage idea that was corrupted by competition. Alt-A was the original “low doc” loan, except contrary to how it all ended, early Alt-A borrowers were actually a better credit than the GSE Prime borrowers. Pre-bubble Alt-A home buyers tended to be people in “cash businesses” that preferred not to disclose their IRS tax documents (use your imagination). Of course this all ended in tears when “no doc” loans transmogrified into the “loan to own” product peddled by independent brokers.

The magic here is that when an Alt-A loan is modified, the principle and interest is pooled by the servicer and upon passthrough to the bond holder, the interest cash flow has priority. This is quite different from an Agency structure where the IO and PO streams are kept separate. So, for example, if a loan was modified from a 6% coupon to a 3% coupon in an Agency deal, the IO would lose half its value (income) while if the same occurred in an (whole loan) Alt-A deal, the PO holder would suffer to the benefit of the IO who has first dibs on the cash.

This should be enough to whet your appetite, call your CS rep for more.

A Final Note: While we do not charge you directly for these Commentaries, it would be greatly appreciated if you would allow Credit Suisse to be fully engaged in executing our ideas. If you presently have CS coverage, please call your Sales Representative to further discuss our thoughts. If you do not have coverage, please open the door for us to commence an active dialogue. Our traders are active in most Global markets and we can transact with you at a competitive price.

I look forward to discussing these ideas with you in the near future.

Harley S. Bassman
Credit Suisse US Rates Trading
December 10, 2013

Clear Notice: This Commentary reflects the view of its author and is independent of CS Strategy.